INTRODUCTION

The last decade witnessed the abandonment of central economic planning and the introduction of market economies in Central and Eastern European countries and elsewhere, the start of the internal market and a process of deregulation in the European Union, and a self-propagating upsurge of globalization of economic activities. This process is likely to get a further impulse from the imminent start of the Economic and Monetary Union. These developments were parallelled by an increased interest of the economics profession in studying the functioning and performance of markets.

In October 1996, the Maastricht Research School of Economics of Technology and Organizations (METEOR) organized a conference on the subject 'Firm and Markets: Performance and Dynamics'. Many contributions to the conference dealt with research in the areas of competition and industrial dynamics, science and technology and industrial policy, performance and new financial markets.

The current special issue of *De Economist* is devoted to research contributions in these areas. Rather than trying to cover the field of the functioning of markets and industrial economics to its full extent, the editorial board has opted for a selection of topics which could be grouped under the heading: 'Market Dynamics and Innovation'.

The first two selected papers review major parts of the literature while the last three make contributions to industrial economics and market analysis and illustrate three different methodologies currently used in the field, i.e. theoretical, experimental, and empirical analyses, respectively. The first paper reviews the theoretical literature of the past twenty years on market structure and innovation. The second paper focuses on collaboration in research and development, assessing both theoretical and empirical findings. The third paper is concerned with technological competition. It analyses the persistence of monopoly and the relationship between the intensity of competition, leadership and investment in research and development. The fourth paper examines a different topic. It analyses market transparency as a mechanism in the competition process between financial markets. It discusses results from theoretical studies and from experiments carried out by the authors, among others. The last paper presents results from an empirical analysis of the determinants of the life expectancy of Dutch newspapers over the last 150 years using duration models.

In the first paper, P. van Cayseele provides a survey of the theoretical contributions on the relationship between market structure and innovation activity over the last decades. He structures the debate by using Schumpeter's two hypotheses on innovative activity as a guiding principle. Schumpeter's first hypothesis states that increased market concentration induces more innovative activity. The second hypothesis claims that there is a positive relationship between firm size and in-

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novation. From the literature up to 1975, it became clear that there is no monotonically increasing relationship between market concentration and innovative activity. The degree of rivalry in R&D appeared to be one of the key variables in fostering inventive activity. Also, the distinction between market structure before and after the innovation appeared to be crucial in understanding the determinants of inventive activity. To provide some reward to the inventor, market structure after the innovation should have some monopolistic features. Empirical research in the years up to 1975 suffered from the presence of the two-way causality between market concentration and innovative activity.

In the decade up to 1985, applied game theory researchers were much concerned with understanding the role of rivalry in fostering innovations. Patent races were studied. One remarkable conclusion arose from these efforts: independent of the number of firms inside or outside an industry, there will be just one or no successful inventor. The market structure before the innovation was found to be largely irrelevant in this theoretical literature which also studied the market dynamics resulting from patent races. As is nicely explained by Van Cayseele, the decade from 1985-1995 led to further refinements of the game-theoretic models by showing under which conditions the number of firms in a market and that of potential entrants is irrelevant for the process of innovative activity, thereby contradicting Schumpeter's first hypothesis in these cases. Finally, Van Cayseele reviews Sutton's (1997) bound approach which states ranges for the predictions from the theoretical literature which hold for a large class of models, independent of the specific assumptions underlying these models. This approach opens new promising ways for empirical work in industrial economics.

In terms of scope, the contribution by R. Veugelers is a companion paper to Van Cayseele's survey. It reviews the theoretical and empirical literature on cooperation in R&D. Increased inter-firm networking, aimed at the production of innovations more than at the dissemination and exchange of knowledge, is observed on a large scale. Motives for this form of collaboration are sharing of costs, risks and complementarities in know-how, markets and products, and the control of competitive forces. In industrial organisation (IO) most research on R&D cooperation is concerned with horizontal cooperation. As illustrated in Veugelers' survey, the IO literature generated results that are fairly robust across a variety of different models. Spillovers and complementarities are the main determinants of R&D cooperation. Risk-sharing is also mentioned but not extensively discussed. Competitive considerations in the transfer of knowledge are found to be of great importance. When spillovers of knowledge exceed some critical level, R&D cooperation appears to be beneficial to the partners involved and seems to be welfare-enhancing. Difficulties in verifying the amount of R&D inputs in an alliance, asymmetric spillovers and incentives to cheat request special attention. Careful design of alliances can overcome these problems and turn R&D cooperation into stable, profitable partnerships. As pointed out by Veugelers, empirical research indicates that industry and partner characteristics (such as simi-

larity and size) are important determinants of the likelihood, profitability and stability of R&D cooperation.

The article by Boone and Van Dijk analyses the relation between the intensity of competition and R&D expenditures at the sectoral level. Intensity of competition is defined in a novel way by introducing conditions in the profit function in such a way that increased competition makes efficiency differences between firms more pronounced. A cost advantage becomes relatively more valuable as competition is increased. A neat example of a model with two firms is presented, in which the chance of innovation depends on R&D expenditures. In the case of equal costs (symmetry), more intensive competition induces higher R&D investments. Symmetry is considered as the outcome of licensing. In the case of unequal costs (asymmetry), the persistence of leadership holds a central place in the discussion. More intense competition leads to higher total R&D expenditures if R&D investment is very cheap or effective, or if the replacement effect dominates the vested cost effect. The authors link their results to Schumpeter's two hypotheses (see also Van Cayseele). They show under which conditions their theoretical findings are consistent with these hypotheses. Finally, the implications for empirical work and for policymaking are discussed.

The contribution by Huisman and Koedijk examines the role of market transparency in the competition process between financial markets. It analyses the impact that different trading mechanisms have on the structure of a financial market, its efficiency, and liquidity. The article reviews some theoretical literature on micromarket structure and reports results from experiments carried out by the authors. The results are used to interpret and explain recent developments on European financial markets. The main thesis in this article is that trading mechanisms determine the transparency of the market. Transparency influences the strategic behaviour of market participants and through this it has a major impact on the competition between exchanges. The authors discuss the different implications of pre-trade and post-trade transparency on market efficiency and liquidity. In a dynamic setting, the difference between the two concepts needs some further consideration. If a market is post-trade transparent, it will be pre-trade transparent in the next stage, except if the information gathered by a participant is not immediately disclosed publicly. If a market is not post-trade efficient, it is not clear how it will become pre-trade efficient in the next stage of trading. As with R&D investments that are costly, for the market to provide some transparency, participants must have an incentive to collect information, a process that is costly too. One way to provide an incentive is to make the information collected by a market participant proprietary – at least for a short period of time. The larger the amounts to be traded, the more important this incentive becomes. Because the expected gains from collecting information that is not immediately disclosed are much higher for large traders than for participants trading small amounts, the dual market structure is expected to arise: a highly efficient market for small trades that is pre- and post-trade transparent coexists with a market that tempo-

rarily does not disclose information and therefore exhibits higher search costs but is more attractive for large trades.

The article by Van Kranenburg, Palm, and Pfann studies important features of the life cycle of an industry. It analyses determinants of the life expectancy of daily newspapers in The Netherlands since 1848, when freedom of the press was written into the Constitution of the Kingdom of The Netherlands. The analysis is carried out using duration models. The liability of aging is found to be U-shaped. During early ages, duration dependence is found to be negative, that is, the hazard rate of leaving the market decreases with age. The exit probability increases when newspapers grow older. Among the determinants of life expectancy, one can mention the competition intensity measured by the number of newspapers present in the market one year before the newspaper enters the market, the turmoil of World War II, indicators for regional appearance. The positive impact of the regional dummy variables on life expectancy of newspapers can be interpreted as the effect of a regional niche on survival. The findings of the article are in line with those implied by the bounds approach put forward by Sutton (1997). They are also in line with the findings of other recent studies investigating the life expectancy of new product markets.

To conclude, while we realize that many other interesting topics could have been chosen, we believe that the selected articles provide the reader with useful and up-to-date information on the state of knowledge in several areas of industrial economics. Moreover, the studies presented report findings from three different types of analysis: theoretical, experimental, and empirical.

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REFERENCE

Sutton, J. (1997), 'Gibrat's legacy', *Journal of Economic Literature*, XXXV, pp. 40–59.